

Action, it appears that 09/974,808 application is assumed to be a parent of the current application.

This is not so. The current application and the 09/974,808 application were filed on the same date. As such, the two applications are merely concurrently filed applications. One is not a divisional or a continuation of the other. The 09/974,808 application has been referenced in the current application to inform that the 09/974,808 application may be relevant.

### **PROPOSED MODIFICATION OF VAN GORKUM WITH KUSUNOKI IMPROPER**

In the Final Office Action, all claims stand rejected under 35 U.S.C. §103(a), at least in part, through a combination of van Gorkum et al., U.S. Patent No. 4,325,084 (“Van Gorkum”) and Kusunoki et al. U.S. Application No. 2001/0017515 A1 (“Kusunoki”). However, the proposed combination fails to meet the burden of establishing a *prima facie* case of obviousness when making a Section 103 rejection.

First, when making a rejection under 35 U.S.C. §103, there must be some suggestion or motivation, either in the reference or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *See M.P.E.P. §§ 2142, 2143.* Also, to support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. (Emphasis added) *See M.P.E.P. § 2142.*

In the Final Office Action, it is stated that it would have been obvious to modify the structure of Van Gorkum with the means for emitting electrons of Kusunoki to “decrease the power consumption of the device.” *See Final Office Action, page 3, line 13.*

However, it is noted that neither Van Gorkum nor Kusunoki state that the devices discussed decrease power consumption. Thus, the supposed “motivation” of the decreasing power consumption is not taught in either Van Gorkum or Kusunoki. In addition, no line of reasoning, let alone a convincing one, has been provided to show that combining Van Gorkum or Kusunoki would actually result in decreasing power consumption. Thus, the requirement of establishing a proper motivation to combine the references has not been met.

Second, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (Emphasis added) *See M.P.E.P. § 2143.01*. In this instance, neither Van Gorkum nor Kusunoki has been cited to teach or suggest the desirability of the combination of the two references. As noted above, the supposed desirability to “decrease power consumption” is not present in either of the references. Therefore, the requirement of the prior art suggesting the desirability of the combination has not been met.

Further, the proposed modifications cannot render a prior art unsatisfactory for its intended purpose. (Emphasis added) *See M.P.E.P. § 2143.01*. It is noted that there is no specifics in the Final Office Action as to how Van Gorkum may be modified through the teachings of Kusunoki (Note: this fails to meet the requirement of the rejection being reasonably specific).

The assertion in the Final Office Action appears to be that through the teachings of Kusunoki, Van Gorkum may be modified such that the following occurs. With reference to Figure 2 of Van Gorkum, the two insulators 6 are extended to cover the aperture 7. When such modification is performed, there is no aperture 7 defined by the insulators 6 since there will be only one continuous insulator 6 covering the entirety of the n region 2, the p region 3, and the surface region 5.

Even assuming *arguendo* that such modification is possible, the modification would render Van Gorkum unsatisfactory for its intended purpose. In Van Gorkum, it is indicated that electron emission results from an avalanche multiplication occurs at the depletion region 17 near the p-n junction 4 when the p-n junction 4 is reverse biased (see Figures 2-4; column 6, lines 31-33 and 56-58). The electrons are then emitted to vacuum from the surface exposed by the aperture 7.

Thus, the aperture 7 is critical to Van Gorkum. For example, Van Gorkum specifically states, “a semiconductor device according to the present invention is characterized the surface has an electrically insulating layer in which at least one aperture is provided ... and ... at least one electrode is provided on the electrically insulating layer on the edge of the aperture.” (Emphasis added) *See e.g., column 2, lines 29-38 of Van Gorkum.*

In addition, if the proposed modification is performed, there will also be only one continuous electrode 8 covering the continuous insulator 6. Like the aperture 7, Van Gorkum indicates that the electrode 8 on or near the “edge” of the aperture is important. For example, Van Gorkum specifically states “By ... providing the accelerating electrode in the immediate proximity on the edge of the aperture, and preferably around the aperture, an equipotential plane is obtained above the gap, which allows the above-mentioned acceleration (of electrons) perpendicular to the surface 5.” (Emphasis added) *See e.g., column 8, lines 5-11 of Van Gorkum.*

Thus, if the proposed modification takes place such that there is no aperture, the modifications would run contrary to the teachings of Van Gorkum. In other words, the proposed modification of Van Gorkum with Kusunoki would render Van Gorkum unsatisfactory for its intended purpose for at least the reasons stated above.

Yet further, there must be a reasonable expectation of success with the proposed modifications. (Emphasis added) *See M.P.E.P. § 2143.02.* There is no explanation, let alone

a reasonable one, provided in the Final Office Action showing how the combination would achieve the desirability to “decrease power consumption.” Therefore, this requirement is not met.

For at least the reasons stated above, the combination of Van Gorkum and Kusunoki is improper and may not be used to reject any claims.

#### **SECTION 103 REJECTION BASED ON VAN GORKUM AND KUSUNOKI**

In the Final Office Action, claims 1-6, 14, and 21-22 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over van Gorkum in view of Kusunoki. Applicants respectfully traverse.

As shown above, van Gorkum and Kusunoki may not be properly combined. As a result, claims 1-6, 14, and 21-22 are distinguishable over the combination of Van Gorkum and Kusunoki.

Applicants respectfully request that the rejection of claims 1-6, 14, and 21-22 based on Van Gorkum and Kusunoki be withdrawn.

#### **SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, AND KOH**

In the Final Office Action, claims 7, 23, and 33 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Van Gorkum and Kusunoki and in further view of Koh et al., Publication No. US 2002/0033536 A1 (“Koh”). Applicants respectfully traverse.

It has been shown above that Van Gorkum and Kusunoki may not be properly combined to reject claims. Koh has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 7, 23, and 33 are distinguishable over the combination of Van Gorkum, Kusunoki, and Koh.

Applicants respectfully request that the rejection of claims 7, 23, and 33 based Van Gorkum, Kusunoki, and Koh be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, AND  
PALARA**

In the Office Action, claims 8, 13, 24, and 28 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum and Kusunoki and in further view of Palara, USPN 5,665,994 (“Palara”). Applicants respectfully traverse.

It has been shown above that Van Gorkum and Kusunoki may not be properly combined to reject claims. Palara has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 7, 23, and 33 are distinguishable over the combination of Van Gorkum, Kusunoki, and Palara.

Applicants respectfully request that the rejection of claims 7, 23, and 33 based Van Gorkum, Kusunoki, and Palara be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, PALARA,  
AND SUZUKI**

In the Office Action, claims 9 and 25 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum, Kusunoki, Palara, and in further view of Suzuki et al. USPN 5,329,141 (“Suzuki”). Applicants respectfully traverse.

It has been shown above that Van Gorkum, Kusunoki, and Palara may not be properly combined to reject claims. Suzuki has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 9 and 25 are distinguishable over the combination of Van Gorkum, Kusunoki, Palara, and Suzuki.

Applicants respectfully request that the rejection of claims 9 and 25 based Van Gorkum, Kusunoki, Palara, and Suzuki be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, PALARA,  
AND MORISHITA**

In the Office Action, claims 10 and 26 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum, Kusunoki, Palara, and in further view of Morishita et al., US Patent No. 5,140,400 (“Morishita”). Applicants respectfully traverse.

It has been shown above that Van Gorkum, Kusunoki, and Palara may not be properly combined to reject claims. Morishita has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 10 and 26 are distinguishable over the combination of Van Gorkum, Kusunoki, Palara, and Morishita.

Applicants respectfully request that the rejection of claims 10 and 26 based Van Gorkum, Kusunoki, Palara, and Morishita be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, PALARA,  
AND BRONNER**

In the Office Action, claims 11 and 27 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum, Kusunoki, Palara, and in further view of Bronner et al., US Patent No. 6,242,770 B1 (“Bronner”). Applicants respectfully traverse.

It has been shown above that Van Gorkum, Kusunoki, and Palara may not be properly combined to reject claims. Bronner has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 11 and 27 are distinguishable over the combination of Van Gorkum, Kusunoki, Palara, and Bronner.

Applicants respectfully request that the rejection of claims 11 and 27 based Van Gorkum, Kusunoki, Palara, and Bronner be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, PALARA, AND ISHIO**

In the Office Action, claims 12 and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum, Kusunoki, Palara, and in further view of Ishio et al., Publication No. US 2002/0014705 A1 (“Ishio”). Applicants respectfully traverse.

It has been shown above that Van Gorkum, Kusunoki, and Palara may not be properly combined to reject claims. Ishio has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 12 and 29 are distinguishable over the combination of Van Gorkum, Kusunoki, Palara, and Ishio.

Applicants respectfully request that the rejection of claims 12 and 29 based Van Gorkum, Kusunoki, Palara, and Ishio be withdrawn.

**SECTION 103 REJECTION BASED ON VAN GORKUM, KUSUNOKI, AND SONG**

In the Office Action, claims 30-31 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Van Gorkum and Kusunoki and in further view of Song, USPN 6,153,014 (“Song”). Applicants respectfully traverse.

It has been shown above that Van Gorkum and Kusunoki may not be properly combined to reject claims. Song has not been cited, and indeed cannot be cited, to correct at least this deficiency. Therefore, claims 30-31 are distinguishable over the combination of Van Gorkum, Kusunoki, and Song.

Applicants respectfully request that the rejection of claims 30-31 based Van Gorkum, Kusunoki, and Song be withdrawn.